

## REMARKS

This Preliminary Amendment accompanies a Request for Continuation application.

In the first Office Action (paper 4) of the parent application, claim 32 was rejected over U.S. Patent No. 6,013,385 to DuBose.

Claim 32, as amended, recites a fuel cell power system comprising, in part, at least one fuel cell, a bleed valve configured to selectively purge non-fuel diluents from the at least one fuel cell and a control system configured to control selective positioning of the bleed valve. Claim 32, as amended, recites patentable subject matter over the prior art of record.

In paragraph 7 of the Office Action it is alleged that DuBose discloses a fuel cell including a purge vent 96 which is periodically opened to atmosphere to purge hydrogen from the anode flow path with reference to column 8, lines 11-20 of DuBose. With reference to Fig. 3 in column 8, lines 11-20 it is stated that it is necessary to periodically vent a portion of the hydrogen from the anode loop through purge vent 96 to atmosphere. Referring to Fig. 3, purge vent 96 is depicted coupled with anode reservoir 92. Accordingly, DuBose teaches venting hydrogen from reservoir 92 and fails to teach or suggest a bleed valve configured to selectively purge non-fuel diluents from the at least one fuel cell, as required by claim 32. Claim 32 is allowable for at least this reason.

Further, claim 32 recites that the bleed valve is configured to purge non-fuel matter from the at least one fuel cell. As described in column 4 of the DuBose patent at line 15, it is clearly stated that vent 96 is utilized to vent a portion of the hydrogen fuel. Accordingly, DuBose fails to teach or suggest the defined bleed valve configured to purge non-fuel matter from the at least one fuel cell as specifically claimed.

Therefore, claim 32 is allowable.

Claims 33-38 and 263-265 which depend from independent claim 32 are in condition for allowance for the reasons discussed above with respect to the independent claim as well as for their own respective features which are neither shown nor suggested by the cited art.

In the parent application, claim 51 was rejected, in the first Office Action (paper 4), under 35 U.S.C. §102(e) for anticipation by U.S. Patent No. 6,001,499 to Grot et al.

Claim 51, as amended, recites a fuel cell power system comprising, in part, a control system configured to monitor an electrical output condition of at least one of the fuel cells and to control an operational parameter of at least one of the fuel cells, and an operator interface coupled with the control system to indicate the electrical condition monitored by the control system.

The Grot et al. reference is directed towards the problem of monitoring undesirably high concentrations of carbon monoxide gas from a fuel source (reformer), located upstream of a fuel cell, to avoid poisoning the catalyst of a fuel cell's anode. The Grot et al. reference indicates that "it is necessary to further remove carbon monoxide from the hydrogen-rich reformat stream exiting the shift reactor, and prior to supplying it to the fuel cell." See Col. 1, lines 53-58; and Col. 2, lines 23-24. The invention of Grot et al. relates to "a sensitive CO sensor utilizing a mini PEM fuel cell as a probe, and a method for real time monitoring of the CO concentration in the reformat feed stream to a PEM fuel cell as a means to control the operation of the fuel cell system. Thus, the invention of Grot et al. relates to a sensor that is used upstream of a fuel cell, for monitoring the fuel supplied to the fuel cell.

Thus, the Grot et al. reference fails to teach or suggest a control system configured to monitor an electrical output condition of at least one of the fuel cells, in combination with the other features of claim 51.

Therefore, claim 51 is allowable.

Further, the Grot et al. reference fails to teach or suggest an operator interface as claimed in applicants' claim 15. In the first Office Action (paper 4) for the parent application, it is alleged in paragraph 2 that the Grot et al. reference discloses a stack of polymer electrolyte fuel cells which are monitored and controlled in response to the level of CO in the fuel, which is related to their voltage output. The controlling is performed by a data processor which would be digital into which data may be inputted referring to teachings in column 10, lines 12-18. The Examiner alleges that the controller includes an operator interface. Applicants disagree.

Column 10, lines 12-18 of the Grot et al. reference refers to current and voltage of a PEM probe which are sampled and plotted over an interval of time which depict the behavior patterns for the voltage and current outputs. The behavior patterns are inputted as data streams into a data processor where they are compared to predetermined reference current and/or voltages. Referring to column 10, lines 35-40, once a match is made between a reference telltale output and a behavior pattern, CO concentration is determined from which adjustments can be made as needed. Accordingly, the teachings of Grot clearly refer to monitoring voltage and current of a sensor to determine CO concentrations within a hydrogen feed stream. The controller is configured to compare behavior patterns with known values and to make adjustments responsive thereto. Such in no fair interpretation discloses or suggests an operator interface as claimed in applicants' claim 51. Applicants have been unable to uncover any teachings or suggestion

of an operator interface as defined in claim 51 in the Grot teachings. The positively recited limitations of claim 51 are not shown or suggested in the prior art of record.

Accordingly, claim 51 recites patentable subject matter over the prior art of record.

Claims 52-58 and 266 which depend from independent claim 51 are in condition for allowance for the reasons discussed above with respect to the independent claim as well as for their own respective features which are neither shown nor suggested by the cited art.

New claims 267 and 282 are similar to original claim 51 but recite specific parameters being controlled. Claims 268-281 depend on claim 267 and claims 283-290 depend on claim 282. Examination on the merits is requested.

In the parent application, claim 59 was rejected, in the second Office Action (paper 9), under 35 U.S.C. §103(a) for anticipation by U.S. Patent No. 5,334,463 to Tajima et al.

Claim 59, as amended, recites in part fuel cells being configured to be individually selectively deactivated and remaining ones of the fuel cells being configured to provide electricity to the terminals with others of the fuel cells deactivated, and, therefore distinguishes over the Tajima et al. reference.

Claims 60-61, 65-67, and 295-296 which depend from independent claim 59 are in condition for allowance for the reasons discussed above with respect to the independent claim as well as for their own respective features which are neither shown nor suggested by the cited art.

New claims 290-294 have been added and are believed to be allowable for reasons that made claims in the parent application allowable. Examination on the merits is requested.

New claim 297 is similar to original claim 59, but recites, in part, a control system

coupled to the power supply and configured to receive electricity from the power supply at least at some times, the control system being configured to monitor at least one operational condition of the power supply.

The Tajima et al. reference fails to teach or suggest a control system coupled to a power supply different from the fuel cell and configured to receive electricity from the power supply at least at some times, the control system being configured to monitor at least one operational condition of the power supply.

Claim 75 was rejected, in the first Office Action (paper 4), under 35 U.S.C. §102(e) for anticipation by U.S. Patent No. 6,001,499 to Grot et al. Reconsideration is respectfully requested. The Grot et al. reference relates to monitoring current through and voltage across a load connected to a probe at a hydrogen fuel feed manifold to a fuel cell stack, and does not in any way teach or suggest a main valve adapted to couple with a fuel source and configured to selectively supply fuel to the fuel cells; and a control system configured to control the main valve. At best, Grot et al. suggests controlling an air injection rate to a PROX reactor (in Col 10, lines 49-59), but this is not the same as controlling a main valve to a fuel cell.

Accordingly, claim 75 recites patentable subject matter over the prior art of record.

Claims 76-79 which depend from independent claim 75 are in condition for allowance for the reasons discussed above with respect to the independent claim as well as for their own respective features which are neither shown nor suggested by the cited art.


New claims 298-358 are method claims that generally parallel the apparatus claims described above and are allowable for reasons similar to those described above.

The Examiner is requested to phone the undersigned if the Examiner believes such

would facilitate prosecution of the present application. The undersigned is available for telephone consultation at any time during normal business hours (Pacific Time Zone).

Respectfully submitted,

Dated: November 21, 2001

By:   
Deepak Malhotra  
Reg. No. 33,560

RECEIVED

Application Serial No. .... Filed Herewith  
Filing Date .... Filed Herewith  
Inventor .... William Fuglevand et al.  
Assignee .... Avista Laboratories, Inc.  
Group Art Unit .... Unknown  
Examiner .... Unknown  
Attorney's Docket No. .... AV1-059  
Title: "Fuel Cell Power Systems"

VERSION WITH MARKINGS TO SHOW CHANGES MADE ACCOMPANYING  
PRELIMINARY AMENDMENT

**In the Specification**

The paragraph at page 1, after "RELATED PATENT DATA" is being amended as follows (underlines indicate additions, ~~strikeouts~~ indicate deletions):

This is a continuation of U. S. Patent Application Serial No. 09/322,666, filed on May 28, 1999, which in turn ~~The present application~~ is a continuation-in-part of U. S. Patent Application Serial No. 09/108,667, filed on July 1, 1998, now U.S. Patent No. 6,096,449, which was a continuation-in-part of U.S. Patent Application Serial No. 08/979,853, filed on November 20, 1997, which is now U.S. Patent No. 6,030,718.

**In the Claims**

The claims have been amended as follows. Underlines indicate insertions and ~~strikeouts~~ indicate deletions.

Claims 1-31 have been canceled.

32. (Amended) A fuel cell power system comprising:

- a housing;
- a plurality of terminals;
- at least one fuel cell within the housing and electrically coupled with the terminals and configured to convert chemical energy into electricity;
- a bleed valve configured to selectively purge non-fuel diluents ~~matter~~ from the at least one fuel cell; and
- a control system configured to control selective positioning of the bleed valve.

Claims 39-50 have been canceled.

51. (Amended) A fuel cell power system comprising:

- a housing;
- a plurality of terminals;
- at least one fuel cell within the housing and electrically coupled with the terminals and configured to convert chemical energy into electricity;
- a control system configured to ~~at least one of control and~~ monitor an electrical output condition ~~an operation~~ of the at least one fuel cell and to control an operational parameter of at least one of the fuel cells; and
- an operator interface coupled with the control system to indicate the electrical condition monitored by the control system ~~at least one operational status responsive to control from the control system~~.



59. (Amended) A fuel cell power system comprising:

a plurality of terminals;

a plurality of at least one fuel cells respectively cell electrically coupled with the terminals and configured to convert chemical energy into electricity, the fuel cells being configured to be individually selectively deactivated and remaining ones of the fuel cells being configured to provide electricity to the terminals with others of the fuel cells deactivated;

a power supply, different from the fuel cells configured to selectively supply electricity; and

a control system coupled to the power supply and configured to receive electricity from the power supply at least at some times, the control system being configured to monitor at least one operational condition of the power supply.

Claims 62-64 have been canceled.

Claims 68-74 have been canceled.

Claims 80-262 have been canceled.

New claims 263-358 have been added.